جامعة المستقبل
AL MUSTAQBAL UNIVERSITY

كلية العلوم
قسم الادلة الجنائية

Lecture (6)

SOLUTIONS OF TUTORIAL

المادة : Complex Analysis

المرحلة : الثانية

اسم الاستاذ: م.م ريام ثائر احمد

Example: write the expression in logarithmic form

1. $7^5 = 16807$

SOL:

$$\log_7 16807 = 5$$

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2. $(16)^{\frac{3}{4}} = 8$

SOL:

$$\log_{16} \frac{3}{4} = 8$$

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3. $(\frac{1}{3})^{-2} = 9$

SOL:

$$\log_{\frac{1}{3}} 9 = -2$$

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4. $\mathbf{3^4 = 81}$

SOL:

$$\log_3 81 = 4$$

5. $\mathbf{(6)^{-1} = \frac{1}{6}}$

SOL:

$$\log_6 \frac{1}{6} = -1$$

Example 2: write the expression in exponential form.

1. $\mathbf{\log_2 32 = 5}$

SOL:

$$(2)^5 = 32$$

2. $\log_7 49 = 2$

SOL:

$$(7)^2 = 49$$

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3. $\log_{16} 4 = \frac{1}{2}$

SOL:

$$(16)^{\frac{1}{2}} = 4$$

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4. $\log_{\frac{1}{5}} \frac{1}{625} = 4$

SOL:

$$(\frac{1}{5})^4 = \frac{1}{625}$$

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5. $\log_9 \frac{1}{81} = -2$

SOL:

$$(9)^{-2} = \frac{1}{81}$$

Example 3: Find the value of the following equation:

1. $\log_7 1 = 0$

2. $\log_3 3 = 1$

3. $\log_3 x = -4$

SOL:

$$x = (3)^{-4}$$

$$x = \frac{1}{3^4}$$

$$x = \frac{1}{81}$$

4. $\log_x 625 = 4$

SOL:

$$x^4 = 625$$

$$x = \pm\sqrt[4]{625}$$

$$x = \pm 5$$

5. $\log_x 100 = -2$

SOL:

$$x^{-2} = 100$$

$$\frac{1}{x^2} = 100$$

$$1 = 100\,x^2$$

$$x = \pm\frac{1}{10}$$

6. $\log_7 7^5$

SOL:

$$5\log_7 7 = 5$$

7. $\log_7(7^3 . 7^8)$

SOL:

$$\log_7 7^3 + \log_7 7^8$$

$$3\log_7 7 + 8\log_7 7$$

$$3 + 8 = 11$$

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8. $\log_2(3x)$

SOL:

$$\log_2 3 + \log_2 x$$

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9. $\log_a(\frac{49}{7})$

SOL:

$$\log_a 49 - \log_a 7$$

10. $\log_a \left(\frac{2^4}{2^{10}}\right)$

SOL:

$$\log_a 2^4 - \log_a 2^{10}$$

11. $\log_5 6^2$

SOL:

$$= 2 \log_5 6$$